

DOCKET FILE COPY ORIGINAL

BEFORE THE  
**Federal Communications Commission**  
WASHINGTON, D.C.

In the Matter of )  
 )  
Advanced Television Systems ) MM Docket No. 87-268  
and Their Impact Upon the )  
Existing Television Broadcast )  
Service )

**COMMENTS OF TELE-COMMUNICATIONS, INC.**

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Tele-Communications, Inc. ("TCI") hereby submits its Comments on the Fourth Further Notice of Proposed Rulemaking regarding the implementation of Advanced Television Systems ("ATV").<sup>1</sup>

## I. INTRODUCTION AND SUMMARY

In these Comments, TCI addresses two principal issues related to the conversion to digital communications: 1) must carry; and 2) technical interface standards. TCI's position on these issues is briefly summarized below.

**A. Must Carry**

The conversion to digital transmission raises complex issues for broadcasters and cable operators and serious cost considerations for consumers. We are at the very beginning of this conversion, and there are many unanswered questions. There

1      Fourth Further Notice of Proposed Rule Making and Third  
Notice of Inquiry, FCC 95-315, MM Docket No. 87-268 (released  
August 9, 1995) ("Notice").

is no need to prematurely establish digital must carry obligations before the Commission, broadcasters, and cable operators have generated practical experience with digital.

In addition, although TCI believes the must carry rules are unconstitutional, surely it is a close legal question (as evidenced by the five separate and often divergent opinions issued in the Supreme Courts' recent Turner decision). A broad extension of the rules to cover multiple broadcast services would be unconstitutional.

If the Commission nonetheless decides to adopt digital must carry rules at this time, it is required by statute to limit cable operators' carriage obligation to broadcasters' primary video service. Moreover, if any obligation to carry a digital broadcast service is imposed on a cable system that has not yet implemented digital technology, then the additional cost necessary for the system to transmit such a digital broadcast signal and for consumers to receive it should be borne by the broadcaster asserting must carry. This requirement is fully consistent with the 1992 Cable Act and with Commission precedent regarding the recovery of costs to implement a cable operator's mandatory carriage obligations.<sup>2</sup> The Commission should not force cable operators to underwrite the cost of conversion and delivery of the signal to consumers' analog televisions when a broadcaster chooses to transmit digitally.

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<sup>2</sup> See infra at pp. 15-17.

There are strong legal and public policy bases that support this approach, including the following:

- The language of the 1992 Cable Act and its legislative history require this limited approach to digital must carry;
- Requiring cable operators to carry multiple digital broadcast services would create numerous technical and practical problems for both broadcasters and cable operators; and
- Must carry for multiple digital feeds would impose very significant costs on consumers.

#### **B. Technical Interface Standards**

While TCI recognizes that there may be times when government standard setting is appropriate, now is not such a time. In highly dynamic markets like this one, standards set prematurely may serve mainly to suppress innovation and technical development. Today, the MVPD marketplace is undergoing an unprecedented level of technological innovation and experimentation. This dynamism is increasingly important to our nation's economy and ultimately will improve consumer welfare by increasing the quality and diversity of entertainment and information services. The Commission should have a strong presumption against any action that curtails this technological growth.

However, as explained more fully below, if the Commission decides that it must set a digital broadcast standard, it should:

- 1) ensure that the standard conforms to the internationally accepted MPEG-2, "Main Level, Simple Profile" specification and that it accommodates the system components already developed and

implemented by the cable industry and other MVPDs; and 2) impose the standard only on broadcasting, particularly if the standard increases the ability of broadcasters to transmit digitally, but limits the flexibility of other MVPDs to maximize their digital transmissions.

## **II. MUST CARRY ISSUES**

Chairman Hundt recently noted that the ATV issues raised in this proceeding "are the most complicated questions ever presented to the FCC about broadcasting in history."<sup>3</sup> The way the Commission handles these complicated issues will dramatically impact the cable industry and the MVPD marketplace.

Today both broadcasters and cable systems operate in an analog mode, and virtually every television set in every home in America can only receive analog signals. However, as the transition to digital occurs, a significant level of complexity will arise due to the different technological time schedules followed by 1,544 broadcasters<sup>4</sup> and the 11,000 plus cable systems with respect to the implementation of digital transmissions. Some cable systems will never implement digital technology, some will implement digital in only part of their systems, and some will fully implement digital. Some will convert analog signals to digital at their headends for digital transmission to the

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<sup>3</sup> "Feds Grapple With Many Critical Digital Questions," Multichannel News, August 7, 1995, at 29.

<sup>4</sup> See Broadcast Station Totals As Of October 31, 1995, FCC News Release, November 9, 1995.

home. Others may convert digital signals to analog at their headends for analog transmission to the home. The technical, regulatory, and cost complications that would result were the Commission to overlay an enlarged must carry requirement over such a multi-platform environment cannot be overstated.

This situation will be made worse if the Commission tries to set the rules of the game before the current state of uncertainty gives way to concrete digital implementations and practical experience. For this reason, TCI strongly urges the Commission to refrain from acting prematurely to extend cable operators' must carry obligations in such an unsettled landscape.

If the Commission nonetheless decides to adopt digital must carry rules at this time, it is required by statute to limit cable operators' carriage obligation to broadcasters' primary video service. The primary video service should be defined as follows: 1) during the transition period (when there may be both analog and digital broadcast signals), only a broadcaster's NTSC signal; and 2) after the transition period, only that primary digital video stream that used to be carried in the broadcaster's NTSC signal.<sup>5</sup>

Moreover, if any obligation to carry a digital broadcast service is imposed on a cable system that has not yet implemented digital technology, the additional cost necessary for the system

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<sup>5</sup> In order to facilitate identification of the primary video service in a digital environment, broadcasters should be required to encode the appropriate service thereby allowing cable operators to more efficiently satisfy their must carry obligations.



to transmit such a digital broadcast signal and for consumers to receive it should be borne by the broadcaster. The Commission should not force cable operators to underwrite the cost when broadcasters choose to transmit digitally.

Digital broadcasting may or may not become popular with consumers. The experience with other technologies has proven time and again that technological capability often does not translate into marketplace acceptance. The unfortunate histories of services such as AM stereo, video telephony, teletext, and videotext provide dramatic evidence of technological capabilities that have failed to win consumer support. Today, a critical mass of digital television sets in American homes sufficient to justify digital broadcasting simply does not exist. It is not and should not be the obligation or responsibility of cable operators or cable subscribers to subsidize development of this critical mass in order to provide new revenue sources for the broadcast industry.

As described below, there are strong legal and public policy analyses to support TCI's positions.

## **A. Legal Analysis**

### **1. The Communications Act Requires That Cable Operators Only Carry Local Broadcasters' Primary Video Service**

Assuming must carry is constitutional,<sup>6</sup> the Commission has correctly construed the 1992 Cable Act by requiring cable operators to carry only local broadcasters' current primary video service.

Sections 614(b)(3) and 615(g)(1) of the Communications Act require a cable operator to carry "the primary video, accompanying audio, and line 21 closed caption transmission" of certain local commercial and noncommercial broadcasters.<sup>7</sup> By specifically designating the "primary video" as the content to be carried, the literal terms of the Act provide that a cable operator's must carry obligations are satisfied by carriage of the broadcaster's principal video service. If Congress had intended for cable operators to carry all or even several of the video services provided by a broadcaster (either at the time of enactment or in the future), it would not have included the "primary video" qualifier.

Congress did not intend for a cable operator's obligation to carry a local broadcaster's "primary video" service to be an expanding obligation. The provision of the 1992 Cable Act which

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<sup>6</sup> TCI believes the must carry rules are unconstitutional and notes that the case challenging their legality on that ground is pending. See Notice at n. 85. Accordingly, TCI specifically reserves, and does not waive, its right to challenge the constitutionality of the must carry requirements.

<sup>7</sup> 47 U.S.C. §§ 534(b)(3) and 535(g)(1) (emphasis added).

specifically addresses the emergence of an advanced television broadcasting standard contemplates only a reformatting of (and thus carriage of) the current programming delivered in the NTSC's primary video feed. This provision -- contained in a section entitled "Signal Quality" -- states:

ADVANCED TELEVISION.--At such time as the Commission prescribes modifications of the standards for television broadcast signals, the Commission shall initiate a proceeding to establish any changes in the signal carriage requirements of cable television systems necessary to ensure cable carriage of such broadcast signals of local commercial television stations which have been changed to conform with such modified standards.<sup>8</sup>

The phrase "such broadcast signals" in this provision refers back to "television broadcast signals," i.e., the single video service in existence at the time of enactment. Moreover, the provision refers to such broadcast signals as having been "changed to conform" with the advanced television standards. In short, the plain language of 47 U.S.C. § 534(b)(4)(B) reveals Congress's intent to secure continued carriage of broadcasters' current primary video service and to maintain transmission of a high quality signal by cable operators upon conversion to an ATV format.

Finally, section 614(b)(3) of Communications Act requires a cable operator to carry, "to the extent technically feasible, program related material carried in the vertical blanking

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<sup>8</sup> 47 U.S.C. § 514(b)(4)(B) (emphasis added).

interval or on subcarriers."<sup>9</sup> This provision simply requires the cable operator to supplement its carriage of the broadcaster's primary video with any program materials that are "related" to the primary video. It does not expand the operator's obligation to include the carriage of new, independent services. The legislative history makes this clear:

Program-related material is meant to include integral matter such as subtitles for hearing-impaired viewers and simultaneous translations into another language. It is not meant to include tangentially related matter such as a reading list shown during a documentary or the scores of games other than the one being telecast or other information about the sport or particular players.<sup>10</sup>

**2. Imposing Additional Must Carry Obligations on Cable Operators Would Clearly Render the Must Carry Regime Unconstitutional Under the First Amendment**

The fact that the existing must carry provisions have come under severe attack and are believed to be unconstitutional by at least several Supreme Court Justices must be heavily weighed by the Commission as it contemplates the possibility of imposing

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<sup>9</sup> 47 U.S.C. § 534(b)(3). A similar requirement is found in Section 615(g)(1) with respect to noncommercial educational broadcast stations.

<sup>10</sup> House Report at 101. Carriage of material that is related to the primary video is only required to the extent it is "technically feasible." 47 U.S.C. §§ 534(b)(3) and 535(g)(1). The Commission has held that carriage by cable systems should be considered "technically feasible" only "if it does not require the cable operator to incur additional expenses and to charge or add equipment in order to carry such material." Must Carry Order, 8 F.C.C.R. 2965, at ¶ 82 (1993).

potentially extensive additional must carry obligations on cable operators.<sup>11</sup>

TCI has long believed that must carry is unconstitutional. Even assuming arguendo that this belief is incorrect, the current provisions present a close question (as evidenced by the five separate and often divergent opinions issued in the Supreme Court's initial Turner decision). An extension of must carry beyond broadcasters' current primary video service would render untenable further claims as to the constitutionality of must carry.

Congress created the must carry requirements to protect the current "system of free, universally available local broadcasting."<sup>12</sup> In light of the growth of the cable industry, carriage on cable systems was thought at the time to be essential for local television stations to have access to viewers. The Conference Committee specifically cited this objective as justification for the imposition of must carry:

Given the current economic condition of free, local over-the-air broadcasting, an affirmative must carry requirement is the only effective mechanism to promote the overall public interest.<sup>13</sup>

Indeed, in remanding the Turner case to the three-judge panel of the district court, the Supreme Court agreed that the

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<sup>11</sup> See Notice at n. 85 (citing Turner Broadcasting System v. FCC, 114 S. Ct. 2445 (1994)).

<sup>12</sup> S. Rep. No. 92, 102d Cong., 2d Sess. 56 (1992). See also 1992 Cable Act, § 2(a)(10) - (16).

<sup>13</sup> H.R. Conf. Rep. No. 862, 102d Sess. 75 (1992) ("Conference Report").

constitutional status of must carry would turn on whether broadcasters' viability was threatened without must carry and, if so, whether the must carry provisions are narrowly tailored to achieve their putative objective.<sup>14</sup>

However, digital conversion will transform the economics of broadcasting by dramatically increasing broadcasters' potential sources of new revenue. Chairman Hundt recently described this fundamental transformation:

The new digital transmission of broadcast will be capable of many wondrous services. With one misnamed "channel" of six megahertz of spectrum, a tower here in Nashville could broadcast to every PC, telephone, computer, and television in the city simultaneously four or five TV shows, and a couple of software programs, and a newspaper, and a phone book, and movies for storage in the VCR (if VCRs still exist). If we gave out, say, five blocks of six megahertz each, we could enable five digital broadcasters to deliver 20 to 30 channels of programs. This could be local competition for cable. ... The digital transmission technology is so supple and flexible that the possibilities of serving the public interest are staggering. And the commercial possibilities are beyond the dreams of avarice. If digital broadcast gained just 10% of the advertising business in this country, it would increase today's TV revenues by half!<sup>15</sup>

In such a transformed broadcasting industry, the very underpinnings of the must carry provisions break down. This is especially true if broadcasters are given an additional 6 MHz of ATV spectrum for free and if they are accorded flexibility to use

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<sup>14</sup> Turner Broadcasting System v. FCC, 114 S. Ct. at 2471-2472.

<sup>15</sup> Speech By Reed Hundt, Chairman, Federal Communications Commission, Before the Industry Leadership Conference, Information Technology Association of America, Nashville, Tennessee, October 9, 1995, at 4 ("Hundt Speech").

this ATV spectrum for applications other than HDTV. TCI strongly opposes the notion that an industry which inherits \$40 billion worth of "prime beach front property in the air"<sup>16</sup>, and is permitted to use it for various revenue-generating applications unrelated to universally available free television, will be accorded enlarged must carry rights on cable systems.

In addition, the rapid development of wireline video competition will provide broadcasters multiple means to reach cable subscribers, thereby further enhancing their competitive position. For example, Ameritech has received authorizations to construct "stand-alone" cable systems in many communities within its telephone service area<sup>17</sup> and Bell Atlantic is proceeding with construction of its Dover Township video dialtone system.<sup>18</sup> The pending telecommunications legislation will further increase broadcasters' distribution alternatives.

These two factors -- new revenue streams and new distribution alternatives -- eliminate the underlying basis for must carry. Congress originally enacted must carry because it perceived that cable was a "bottleneck" and, therefore, mandatory

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<sup>16</sup> Id.

<sup>17</sup> See, e.g., Ameritech New Media Enterprises, Inc., W-P-C-7106, DA-95-2067 (Com. Car. Bur. Sept. 28, 1995).

<sup>18</sup> Bell Atlantic has apparently received all necessary regulatory approvals to offer its permanent commercial video dialtone service, and the Commission has proposed waiving the cable programming service tier cable rate regulations for systems subject to competition from Bell Atlantic's system. In re Waiver of the Commission's Rules Regulating Rates for Cable Services, Order Requesting Comments, FCC 95-455, released November 6, 1995.

carriage was necessary to ensure that broadcasters' public interest programming was available to consumers.<sup>19</sup> The proliferation of new distribution alternatives, coupled with the development of new revenue opportunities, removes the perceived bottleneck and, in doing so, renders must carry unconstitutional.

## **B. Public Policy Analysis**

### **1. The Commission Should Impose the Cost of Digital Must Carry on Broadcasters, Not Consumers**

The costs for a current analog cable system to transmit a digital broadcast signal could be very significant. Depending upon the conditions unique to a particular market, these costs could include the following:

- Equipment at the headend to convert each broadcaster's digital signal to analog;
- Equipment at the headend to demodulate the broadcast signal and remodulate it to conform to the system's technical standards;
- Equipment at the headend to separate the broadcaster's primary video service from other digital feeds; and
- Digital set-top boxes in the consumer's home (such boxes are expected to cost approximately \$400);

TCI recognizes that the transition to digital will be costly. TCI believes that in the long run the enormous benefits of digital technology will more than make up for these costs. However, it is important that the costs be imposed in a way that makes rational economic sense for consumers. That is a complicated dynamic which involves consumer demand; consumer demographics; the state of technological development; standards;

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<sup>19</sup> See 1992 Cable Act §§ (15), (16).



the size, sophistication, and age of the cable system; and many other factors.

TCI is concerned that the complicated trade-offs inherent in the transition to digital not be set aside in favor of a single factor -- the broadcaster's decision that it is in its own interest to transmit a digital signal. The timing of the transition to digital, with all the enormous cost implications for consumers, should not be the sole prerogative of the broadcaster.

In this regard, the Commission must recall that the cable industry is not monolithic. There are thousands of different cable systems with very different characteristics. Digital conversion will impact them all differently. In some cases, forcing digital conversion at the broadcaster's whim could have a severe impact. Consider, for example, TCI's cable system in Silt, Colorado. Silt is a rural community more than 100 miles from Denver, but within the Denver ADI, so that Denver broadcast signals qualify for must carry. The Silt cable system has 428 subscribers. If the Commission adopts a rule that forces the Silt system to upgrade to digital simply because a broadcaster decided that it was in its own interest to transmit digitally in Denver, cable rates could skyrocket as the cost of digital conversion is spread over only 428 subscribers.

As noted, TCI believes that the conversion of cable systems to digital should occur based on rational marketplace economics, not broadcaster prerogatives. But if the Commission is

determined to place the sole discretion for digital conversion in the hands of the broadcasters, then it should make the broadcasters incur the costs of the conversion. This, at least, would avoid unfairly imposing the costs on consumers in Silt and other cable systems around the country.

It also would be consistent with past Commission precedent. In the must carry context, for example, the Commission held that "it is the television station's obligation to bear the costs associated with delivering a good quality signal to the system's principal headend."<sup>20</sup> The Commission further held that a cable operator should be compelled to carry program-related materials in a broadcaster's VBI only "if it does not require the cable operator to incur additional expenses and to change or add equipment in order to carry such material."<sup>21</sup>

Similarly, in the leased access context, Congress directed that the leased access carriage requirements not "adversely affect the operation, financial condition, or market development

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<sup>20</sup> Must Carry Order, 8 F.C.C.R. 2965, at 104. The Commission went on to note that such costs may be for "improved antennas, increased tower height, microwave relay equipment, amplification equipment and tests that may be needed to determine whether the station's signal complies with the signal strength requirements, especially if the cable system's over-the-air reception equipment is already in place and is otherwise operating properly." Id. (footnote omitted). See also 47 U.S.C. § 514(h)(1)(B)(iii) (a local broadcasting station that does not meet the statutory signal strength specifications is not entitled to must carry "if such station does not agree to be responsible for the costs of delivering to the cable system a signal of good quality or a baseband video signal").

<sup>21</sup> Must Carry Order, 8 F.C.C.R. at 2986.

of the cable system."<sup>22</sup> The Commission accordingly held that a cable operator is "not obligated to invest in equipment or technology not already in its possession" and "that leased access programmers must reimburse operators for the reasonable cost of any technical support operators actually provide."<sup>23</sup>

In addition, Congress mandated that the costs of providing PEG access programming not be borne by the cable operator. Instead, Section 47 U.S.C. § 543(b)(4) provides that all such costs may be passed through to cable subscribers and reported on a separate line item of subscriber bills.<sup>24</sup> Finally, while Congress created the tier buy-through prohibition in 47 U.S.C. § 543(b)(8)(B) it provided that the Commission may waive the prohibition if it requires the cable operator to purchase extra equipment or otherwise results in increased cable rates.<sup>25</sup> The Commission has implemented such a waiver procedure.<sup>26</sup>

In short, both Congress and the Commission have determined that governmentally imposed program carriage requirements should not impose additional cost burdens on cable operators. Consistent with this precedent, the Commission should not impose

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<sup>22</sup> 47 U.S.C. § 532(c)(1).

<sup>23</sup> In the Matter of Implementation of Sections of the Cable Television Consumer Protection Act of 1992: Rate Regulation, 8 F.C.C.R. 5631, 5942 (1993) ("Rate Order").

<sup>24</sup> See Rate Order, 8 F.C.C.R. 5631, 5967, (1993).

<sup>25</sup> 47 U.S.C. § 543(b)(8)(B).

<sup>26</sup> Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Report and Order, 8 F.C.C.R. 2274, 2279-2280 (1993).

the additional costs of carrying digital broadcast signals on cable operators.

**2. A Requirement to Carry Multiple Digital Broadcast Signals Would Cause Substantial Confusion and Frustration to All Cable Subscribers**

Certain real-world practical factors justify limiting must carry to broadcasters' current primary video service. In fact, a requirement to carry multiple broadcast signals could have absurd consequences. Consider, for example, a 36 channel system that has not implemented digital technology and which is carrying all of the five broadcast signals in the cable system's area. If two of the broadcasters decided to provide multiple digital signals, the cable operator would be required to drop seven signals (up to the statutory maximum of one-third of useable activated channels) to satisfy its must carry obligation. This would lead to consumer frustration as the operator is forced to drop existing, popular programs to accommodate the new must carry services. It also would lead to consumer confusion because channels would have to be realigned to accommodate broadcasters' elected channel positions for such services. Finally, programmers will be quick to point out the marked inefficiencies in the use of cable system capacity.

The impact would be particularly harsh in cable systems that are already channel locked (largely due to compliance with existing must carry obligations). Such systems would have no additional capacity to accommodate any new digital must carry

signals. Cable systems serving 67% of cable households have no useable activated channels available.<sup>27</sup>

**3. The Constantly Varying Number of Signals in A Digital Broadcast Feed Will Make a Requirement to Carry Multiple Digital Broadcast Signals Unworkable**

The fact that digital broadcast services would be involved would make this situation even worse. One of the consequences of implementing digital broadcast transmissions is that the number of programs a broadcaster will be able to transmit in the 6 MHz ATV spectrum will vary from one day-part to the next based on the nature of the programming being transmitted at any given time. For example, a movie transmitted in HDTV format would take the entire 6 MHz ATV bandwidth, so that no other programming could be simultaneously transmitted. By contrast, at another time, the broadcaster (assuming it is accorded the regulatory flexibility to do so) could simultaneously deliver five or six NTSC-quality movies. The implications for cable carriage of such continuously varying programming offerings are enormous.

Unlike the current analog environment in which carriage of a single broadcast channel requires the dedication of only a single cable channel, in a digital broadcasting environment, mandatory carriage of all broadcaster feeds could introduce chaos for the cable operator. This would be particularly true in systems whose technical configuration would require the operator to convert the broadcaster's digital feed to analog at the headend. The

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<sup>27</sup> See Arthur D. Little Report of Availability of Channels in U.S. Cable TV Systems, at 9 (April, 1995).

continuously varying number of transmitted broadcast services would prevent an operator from planning for the efficient allocation and use of its cable spectrum. For example, if the broadcaster transmits a single HDTV movie, the cable operator would be required to dedicate a single 6 MHz channel slot to retransmit this programming. If, on the other hand, the broadcaster sends five simultaneous movies, the operator would be forced to allocate four additional channel slots to accommodate the broadcasters' programming. And this complexity would be compounded by every local broadcaster which is transmitting digitally.

**4. A Requirement to Carry Multiple Digital Broadcast Services is Unnecessary Because Marketplace Forces Will Drive the Development of Quality Broadcast Programming Which Will Be Carried By Cable and Other Distributors**

The realities of the video programming marketplace will adequately protect the broadcast industry while facilitating the rapid deployment of digital broadcast services. As described above, the advent of ATV has the potential to provide broadcasters with revenue streams "beyond the dreams of avarice,"<sup>28</sup> and developing competition for wired delivery of video services provides broadcasters with a choice of conduits to reach cable households. Moreover, not only will broadcasters' multiple digital streams be delivered over the air for those consumers that want them, but if consumers demand the programming provided by broadcast stations on their "secondary" digital streams, MVPDs

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<sup>28</sup> Hundt Speech at 4.

will make every effort to ensure that these valued programs are provided to their subscribers.

One thing has become clear three years after the 1992 Cable Act was passed: competition, not regulation, is the most efficient way of increasing program diversity, lowering prices, and improving quality.<sup>29</sup> The incentive for broadcasters to quickly convert to digital technology and to develop high quality services will only be maximized if broadcasters are exposed to the vigorous competition of the video marketplace.

### **III. DIGITAL STANDARDS**

The Commission correctly notes that "complex economic and technical interrelationships between broadcasters and cable operators" will abound during the transition to advanced television.<sup>30</sup> Whatever the Commission does in the digital broadcasting context could dramatically impact the tremendous progress being made by cable operators and other multichannel video distributors in the migration to digital television. The Commission must assiduously avoid doing anything that could stifle this progress. In particular, TCI urges the Commission not to impose digital standards on cable operators or to impose the costs of carrying digital broadcast signals on the cable industry.

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<sup>29</sup> Indeed, the Act itself mandates such a preference by directing the Commission to "rely on the marketplace, to the maximum extent feasible." 1992 Cable Act, § 2(b)(2).

<sup>30</sup> Notice at ¶ 85.

**A. The Government Should Avoid Setting Technical Standards in Dynamic Industries**

Digital standards should be set by the marketplace, or industry standards-setting bodies, and not by the Commission or any other government entity.<sup>31</sup> This is especially true when technology is undergoing rapid change. Government standards setting in such an environment is particularly complex and risky because mistakes tend to be non-linear -- small errors in judgment today can have disastrously large consequences tomorrow. Drs. Stanley M. Besen and Leland L. Johnson, two recognized scholars on the issue of technical standards setting, have concluded:

[T]he government should refrain from attempting to mandate or evaluate standards when the technologies themselves are subject to rapid change. ... It is only after the technologies have "settled down" that government action is most likely to be fruitful, as illustrated in the TV stereo case.<sup>32</sup>

The MVPD marketplace is currently undergoing the most dynamic period of technological innovation and experimentation in its history. For example, various cable operators, including TCI, have made substantial investments in digital technology and are currently experimenting with diverse network topologies for

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<sup>31</sup> See, e.g., TCI comments filed in CS Docket No. 95-61, at 7-10.

<sup>32</sup> Stanley M. Besen and Leland L. Johnson, "Compatibility Standards, Competition, and Innovation in the Broadcasting Industry," Rand Corporation, November 1986, at 135 ("Rand Compatibility Study").



delivering interactive digital TV.<sup>33</sup> DBS operators have already launched digital video systems and sold over one million digital satellite receivers to consumers. Telcos continue to explore various video platforms, including Asymmetric Digital Subscriber Line, hybrid fiber coax, or switched digital video. MMDS operators reportedly will soon implement digital compression in their systems. Each of these industries has invested significantly in research and development efforts, and many have undertaken costly market trials to test consumer demand for innovative digital services.<sup>34</sup> The Commission should not thwart this valuable activity by prematurely imposing digital video standards on MVPD technologies.

The histories of the personal computer ("PC") and personal communications services ("PCS") industries are particularly illuminating in this regard. The government's reliance on a market-driven standards process in the PC industry has resulted in increased consumer choices, reduced equipment prices, unprecedented innovation, and sustained U.S. leadership in this global industry. Similarly, the Commission recognized the rapid technological change in PCS development and established a flexible regulatory approach to PCS technical standards:

[M]ost parties recognize that PCS is at a nascent stage in its development and that imposition of a rigid

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<sup>33</sup> See "Tech Debate Blurs Digital Agenda," Multichannel News, June 12, 1995, at 1A.

<sup>34</sup> See "Go Digital," Cablevision, May 22, 1995, at 39-50; See also "Server Vendors Eye Compatibility Issues" and "Ventura To Test Two-Way TV," Interactive Age, April 10, 1995, at 42.